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(52) UK CL (Edition T )

H4L LDGX L209

(56) Documents Cited

WO 2000/069191 A1

[http://www.mtsgm.com/ir/press/press\\_3600.html?](http://www.mtsgm.com/ir/press/press_3600.html?)  
"Mobile Telesystems (MTS) presents a new GSM  
service"

[http://bluefactory.com/web/press/15 February](http://bluefactory.com/web/press/15_February_2001.htm)  
2001.htm "WAP services"

(58) Field of Search

UK CL (Edition T ) G4A AUDB , H4L LDGX LDPC  
LECCP LECCX LRAB

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(54) Abstract Title

**Method of sending data to a wireless information device**

(57) A method of sending data to a wireless information device in which data forming part of an exchange between two or more wireless information device e.g. user 1, user 2 is sent to the device and that data causes information to be displayed on the device using a SIM browser resident on the device. This allows, in one implementation, the creation of a simple, bandwidth-light means of using a SIM Browser to deliver dynamic user to user data exchange, as may occur for example in multi-user games, yet without using WAP or any other form of internet connection. Data may also be exchanged with devices having WAP or html browsers.

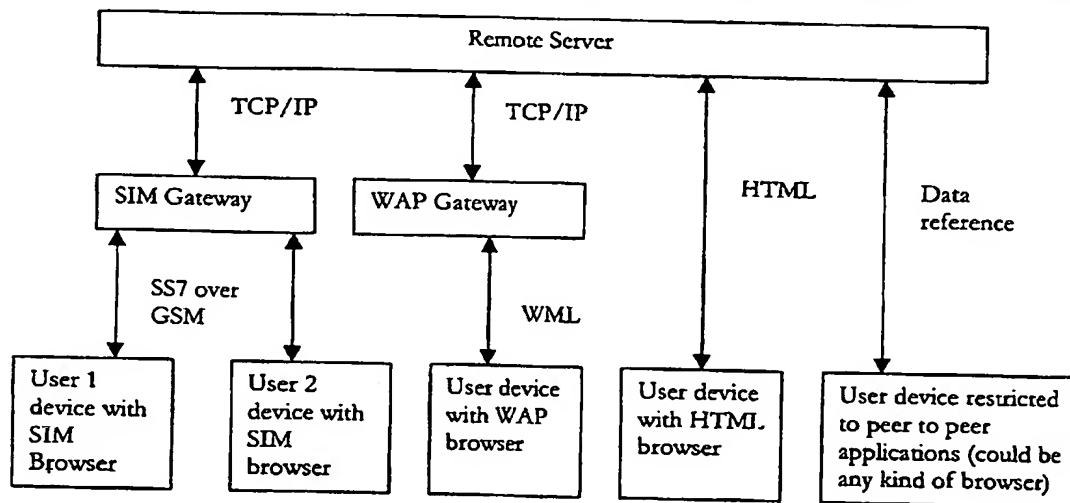


Figure 1

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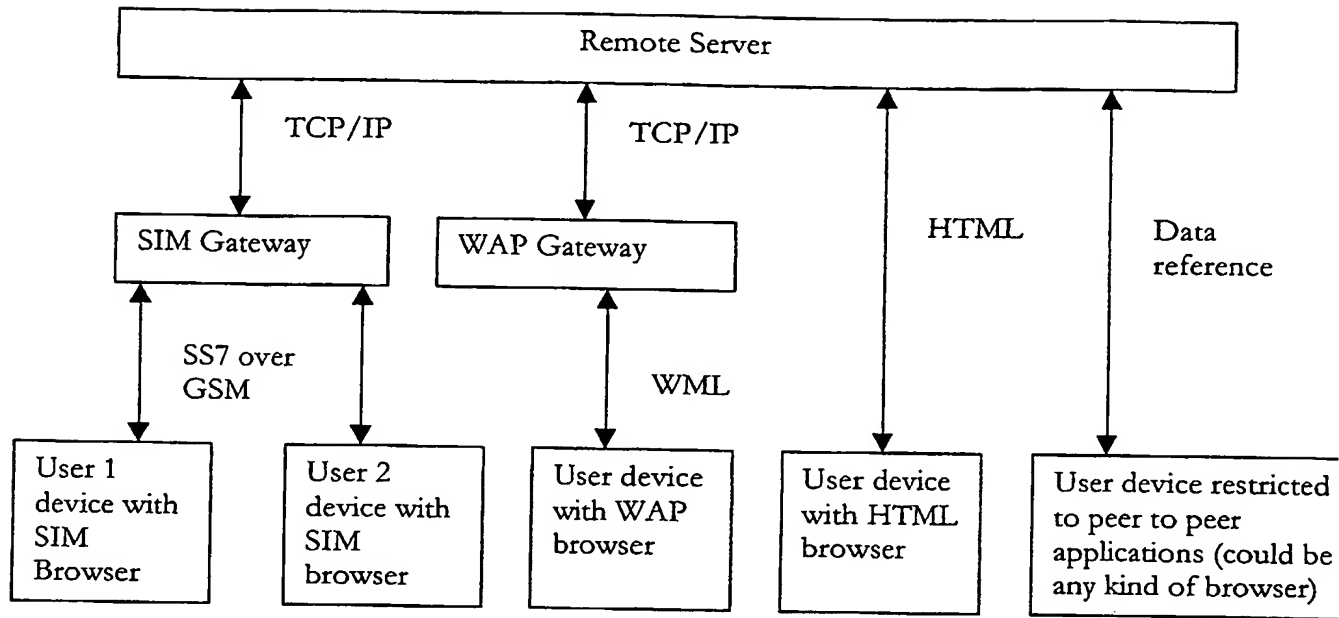


Figure 1

## METHOD OF SENDING DATA TO A WIRELESS INFORMATION DEVICE

### FIELD OF THE INVENTION

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This invention relates to a method of sending data to a wireless information device. The data may initiate or otherwise relate to multi-player games played on wireless information devices. The term 'wireless information device' includes any device able (i) to receive and send data sent at least in part over a wireless bearer and (ii) to display information. It therefore includes, without limitation, mobile telephones, communicators, smart phones, personal organizers, PCs and dedicated game playing consoles.

### DESCRIPTION OF THE PRIOR ART

#### 15 SIM Browser – a description

Data sent to a mobile telephone is conventionally in one of two formats: (i) SMS format text data, mostly used for sending short messages between mobile telephones and (ii) WML format data, mostly used for displaying simplified versions of web sites on telephones which include a WAP browser. However, not all mobile telephones include WAP browsers. One solution to this is to use the SIM Browser functionality; SIM browsers are far more common than WAP browsers and are pre-installed on many mobile telephone SIM cards. They provide a means for the delivery of interactive WML-based services to SIM Application Toolkit-enabled mobile phones without requiring a WAP browser (or an internet connection or modem) on the handset or handsets involved. WML pages are relayed from an online server to a SIM Gateway, where they are transmitted over the SS7 Signalling layer of the GSM protocol via an SMS centre to the handset in question. Hence, the SIM browser approach is a hybrid between conventional SMS and conventional WAP, since it uses WML formatted data used in WAP but sends it over the SMS bearer used for SMS text messaging. The SIM browser on the SIM card of the device itself enables these transmitted pages to be displayed in a standardised, WAP-style format – although no mobile internet connection has

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been employed. The user is then able to interact by relaying messages to the server in the opposite direction.

To date, use of SIM browser technology has however largely been restricted to network service functions, such as conducting terminal queries from customer service centres. However some companies, for example Bluefactory in Sweden, have begun to use the delivery system to enable basic single-player games, such as word-puzzles.

However, the full potential of SIM browser technology as a multi-user system capable of interfacing with other systems – such as K Technologies' peer-to-peer data transfer system as described in co-pending GB 0112060.9 – has not yet been realised. The current appeal and reach of SIM Browser technology, and the applications it supports, remains limited as a result.

## SUMMARY OF THE INVENTION

In a first aspect of the invention, there is a method of sending data to a wireless information device in which data forming part of an exchange between two or more wireless information devices is sent to the device and that data causes information to be displayed on the device using a SIM browser resident on the device

This allows, in one implementation, the creation of a simple, bandwidth-light means of using a SIM Browser to deliver dynamic user to user data exchange, as may occur for example in multi-user games, yet without using WAP or any other form of internet connection. The following steps occur in this implementation, as shown schematically in Figure 1.

1. User 1 enters an ID relating to User 2 (a phone number, user name, or other unique ID) into the application interface on their handset.
2. This triggers a message that is relayed over the SS7 Signalling Layer of the GSM protocol to a Remote Server via a SIM Gateway.

3. The Remote Server (internet-based) stores data relating to both User 1 and User 2, and to the status of the applications they have access to. It receives the incoming message from User 1, and matches it with the relevant information on User 2.

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4. An automated message is relayed from the Remote Server to User 2, containing whatever relevant content has been prompted by the initial message from User 1 (e.g. a challenge to a game, a chess move, etc). The message is routed over a TCP/IP connection to a SIM Gateway, where it is converted into SS7-compatible format and delivered wirelessly to User 2's device.

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5. The information is displayed to User 2 via their SIM Browser interface, prompting a return interaction which is relayed back to User 1 via the SIM Gateway and Remote Server.

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6. The result is a rapid and dynamic multi-user experience that gives the impression of a direct peer-to-peer experience – without requiring a WAP connection or any other form of internet connectivity on the end device.

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In a second aspect of the invention, there is provided a method of sending data to a wireless information device in which data is sent to the device and causes a graphic or animated graphic stored in an internal memory or SIM cache of the device to be displayed on the device using a SIM browser resident on the device. Current SIM browser content delivery over GSM's SS7 layer is restricted to text alone; this second aspect of the invention clearly offers a richer and more compelling experience, which may be particularly effective in multi-player gaming and instant messaging applications.

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In one implementation, the following occur:

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1. SIM Application Toolkit (SAT) file or files relating to the application in question are installed on the user's device, by any one of a number of means:

- a. Pre-installation on the user's SIM and/or the internal memory of their device prior to purchase
- b. Upgrade to the user's SIM card and/or the internal memory of their device in a service centre or retail outlet
- c. Over the air (OTA) download to the user's SIM card and/or the internal memory of their device

2. These files may include standard features such as the addition of the application to the phone's options menu, and a small content cache. However, these files may also include a number of graphic images and/or animations, which reside in the SIM cache or the internal memory of the user's device.

3. The user goes on to interact with the application. As with conventional applications, animations and graphics can be triggered by the end user's actions (e.g. pressing "send" might prompt an image of a transmitting satellite). Unlike other SIM browser applications, however, graphics and animations can also be triggered remotely from server-originated messages, as follows:

- a. Certain messages relayed from the Remote Server to the End Device include "metadata" information
- b. This metadata is recognised as such by the resident software installed on the End Device in step 1 above, and is not displayed as text to the end user
- c. Instead, these metadata messages are used to trigger pre-programmed routines involving graphics and/or animations stored on the user's device and/or SIM card and displayed on the handset user interface – for example, an animation of a satellite receiving a signal.

4. As a result, programmers will be able to develop more compelling multimedia applications using SIM Browser and SAT technology, instead of the current generation of primitive text-based applications.

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Two distinct multi-user mobile data communication models are likely to emerge:

- (i) a "thin client, fat server" model, where users connect to a remote server where interaction with other users and applications takes place (the first and second aspects described above relate primarily to server based systems, as opposed to peer to peer systems);
- (ii) a "client-based", peer-to-peer model, where users with applications locally stored on their handset interact directly with each other over whatever network connection is available, without connecting to a remote server

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At present, no means of integrating two such systems has been mooted. The third aspect of the invention relates to such a method, and thereby ensures that these models of mobile interactivity complement rather than compete with each other. The third aspect enables users of mobile terminal-based (peer to peer) applications to interact seamlessly with users of server-based applications. As well as being applicable to two users interacting with each other using SIM browser-enabled devices, this invention extends to the situation where one or more of the devices involved is not SIM browser-enabled. For example the user of a SIM browser-enabled device would be able to use this aspect of the invention to interact with the user of a WAP-enabled device and/or the user of a device with the peer-to-peer engine detailed in co-pending patent GB 0112060.9 installed on that device.

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In essence, a server is used to translate terminal-based messages into a format that can be conveyed to server-reliant handsets, whether via SIM Browser/WAP/internet connection, and vice versa. The server acts as a proxy for server reliant handsets in order to send and receive data from handsets which operate solely a peer to peer communications mode – i.e.

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the server becomes another peer node, but can additionally and simultaneously operate as the server in a client/server mode, passing data to an appropriate gateway (if needed, such as a WAP or SIM gateway). The process is operational in both directions. Figure 1 shows this approach, allowing any kind of user to interact with any other kind.

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Example use: to enable multiplayer gamers with the K Technologies games engine resident in their handsets (i.e. terminal-based users) to interact with gamers who do not have the resident application but instead are interacting via a server-based system (whether using SIM Browser, conventional WAP, or a full HTML-based internet connection).

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In the K Technologies' peer to peer system, data can be transferred directly from a first wireless information device to a second wireless information device, using the following process:

- (a) a first data structure is present in the first wireless information device;
- 15 (b) a reference is defined which relates to data held in the first data structure;
- (c) the reference is sent directly to the second wireless information device over a wireless bearer, the reference causing a second data structure in the second wireless information device to be modified in dependence on the reference.

20 The first and second data structures may each contain an identical or substantially similar software program and an identical or substantially similar database. By sending a reference between mirror databases in wireless information devices over a wireless bearer, as opposed to the underlying data being referenced, it is possible to significantly reduce data transfer requirements. An automated response message may be sent back to the first device, triggered  
25 by the reference. In the third aspect of the present invention however, the reference is sent not to a second wireless device, but instead to a remote server which includes a server-based data structure, which is modified in dependence on the incoming reference. The modification to the data structure in the server then leads to an output being sent to a recipient wireless information device. The output causes an appropriate display on the  
30 recipient wireless information device, which may utilise the SIM browser approach defined



in the first aspect of the invention (or other approach, such as WAP or full HTML). This recipient device can in turn send reply data to first device the server, which causes an appropriate output to be sent to the first device.

- 5 In this way, mobile terminal-based (peer to peer) applications can interact seamlessly with users of server-based applications

In one implementation, the following occur:

- 10 From terminal-based user (Device A) to server-based user (Device B):
1. A value is selected by the user of Device A from the application interface on their handset
  - 15 2. This value is stored within a database on Device A itself, where it possesses a unique ID (e.g. Game 1, Card 32, Value 3, etc.). Selecting the value generates a character string that encodes this information in an ID string.
  - 20 3. This ID string is then relayed to a Remote Server via a wireless connection (for example, in WDP-SMS format, routed via an SMSC and an SMS-to-IP gateway)
  4. The Remote Server stores a database with equivalent content to that found on Devices A and B – namely a database with a set of values stored in indexed format. (This database might also store a set of user values relating specifically to Device B
  - 25 and/or its user – in the case of games such as Pop Swap, this might be values such as “no. games played”, “no. cards held”, “order of cards in pack”, etc.)
  5. The incoming ID string from Device A is cross-correlated with data held in the relevant field or fields on the server database (e.g. ID string “Game 1, Card 32, Value
  - 30 3” = Madonna, Singles 65).

6. This value might then be compared with an equivalent value relating specifically to Device B, and a logic conclusion reached (e.g. "user B's top card is Britney Spears; Britney Spears has 10 singles, user A's top card is Madonna, Madonna has more singles than Britney, therefore user A wins over user B.")
7. The resulting translated data (e.g. "Madonna beats Britney. You Lose!") is then relayed to Device B, where it might be displayed via the user interface. (In the SIM Browser model, data might be transferred via a SIM Browser gateway; in the WAP or internet model, this might be via a standard TCP/IP connection.)
8. A data message might also be sent to Device A in coded ID string format, prompting changes within the Device A database (e.g. "increase cards held by 1")
9. A number of changes to the values held in the database stored on the Remote Server might also be effected.

**CLAIMS**

1. A method of sending data to a wireless information device in which data forming  
part of an exchange between two or more wireless information devices is sent to the device  
5 over a wireless network and that data causes information to be displayed on the device using  
a SIM browser resident on the device.
2. The method of Claim 1 in which the exchange relates to a multi-player game.
- 10 3. The method of Claim 1 in which data is sent from an originating wireless  
information device and the data is then routed through a server which passes the data to a  
SIM gateway so that it can be sent to the device for display on the device.
4. The method of Claim 3 in which the originating wireless information device is  
15 capable of peer to peer communication and the server acts as a peer.
5. The method of any preceding Claim in which the device can send a reply to that data  
and that reply causes information to be displayed on an originating device (i) using a SIM  
browser resident on that device by sending that reply through a SIM gateway or (ii) using a  
20 WAP browser by sending the reply through a WAP gateway).
6. The method of Claim 1 in which data is sent to the device over a wireless network  
and causes a graphic or animated graphic stored in a SIM cache on the device or an internal  
memory of the device to be displayed on the device using the SIM browser resident on the  
25 device.
7. The method of any preceding Claim where the bearer used to relay data to the device  
is the SS7 layer of GSM.

8. A wireless information device programmed so that a SIM browser resident on the device displays information received over a wireless network from another wireless information device and which forms part of an interaction between users.

5 9. The device of Claim 8 in which the information is relevant to initiating or playing a multi-player game.

10. The device of Claim 8 in which a SIM cache or an internal memory is programmed to cause a graphic or animated graphic to be displayed on the device using the SIM browser  
10 resident on the device when predetermined data is received by the device.



Application No: GB 0126898.6  
Claims searched: 1-10

Examiner: John Betts  
Date of search: 24 May 2002

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK CI (Ed.T): H4L (LRAB, LDGX, LDPC, LECCP, LECCX) G4A (AUSB)  
Int CI (Ed.7): H04Q 7/22 7/30 7/32 11/04 G06F 17/30 19/00  
Other: On-line: WPI, EPODOC, JAPIO, GOOGLE internet search

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	WO00/69191 A1 (Gemplus) see abstract, page 2 lines 13-30 and page 3 lines 1-9	1, 4, 8
A	<a href="http://www.mtsgsm.com/ir/press/press_3600.html?">http://www.mtsgsm.com/ir/press/press_3600.html?</a> "Mobile Telesystems (MTS) presents a new GSM service"	
A	<a href="http://www.bluefactory.com/web/press/15february2001.htm">http://www.bluefactory.com/web/press/15february2001.htm</a> "WAP services"	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.